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THE INTERPLAY OF FIRMS' ABSORPTIVE CAPACITY, EXPORT ORIENTATION AND INNOVATION STRATEGIES: EVIDENCE FROM RUSSIA

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Abstract: Exporters' advantages have been discussed in the literature for many decades. Scholars report positive influence of export on firms' productivity, efficiency, innovativeness etc. However different contexts suggest different outcomes of the exporting activity.
The aim of this study is to analyze the interplay between firms' absorptive capacity, export orientation and innovation strategy of Russian firms. We argue that for Russian firms developed absorptive capacity is an essential antecedent of exporting capacity. Moreover absorptive capacity not only affects firms' export strategies but is affected itself by export and innovation strategy of the firm.
We test our hypotheses using Confirmatory Factor Analysis (CFA). The data was collected by survey of Russian exporters. Total sample accounts 107 observations.

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Introduction

Companies involved in exporting have been found to be more productive, efficient and capital-intensive than non-exporters (Fernandes & Isgut, 2015). Besides, exporting is the most common mode of firms' international involvement because it entails minimum business risks, requires low commitment of resources and provides high flexibility. .

Whereas the question of exporters higher competitiveness over non-exporters is not intriguing any more, the issues of firm's learning by exporting is still questionable. Some evidence suggests that there is no direct link between firm's learning and its export activity (Clerides et al, 1998; Bernard and Jensen, 1999) while others claim the opposite (De Loecker, 2007; Delgado et al, 2002).

In this regard the call for more context research (Li et al, 2010) is considered as rather relevant. The authors state that the impact of export on innovation for instance may be unique to the emerging-market context due to the latecomer status of firms

Usually researchers state that firms in emerging markets typically do not have the internal knowledge or capabilities to engage in extensive R&D activities and that's way they need an access to external, advanced foreign knowledge (Li, Chen and Shapiro, 2010). There are several channels through which company can acquire this knowledge and one of them is exporting.

Russian firms being relatively latecomers in terms of outward foreign direct investments however have a substantial experience of trade with foreign countries. Especially good development was observed with neighboring countries and former USSR countries. At the same time Russian firms recently faced an increasing competition at these markets opened up to the rest of the world after USSR period. In order to be competitive firms have to learn how to operate in new environment and offer better product to their customers.

In this study we aim to find out whether exporting activity contributes to development of Russian firms' absorptive capacity and what are those factors, which influence firm's absorptive capacity development by mean of export.

We analyze the data collected by survey of Russian manufacturing firms. While the survey is still in process we were able to test our hypothesis based on sample of 107 companies. The structural equitation modeling (SEM) was chosen as an appropriate method of analysis.

Our preliminary results show that export itself does not enhance the absorptive capacity development however exporting activity affects it indirectly through innovation strategy chosen by the firm. Furthermore absorptive capacity forms firm's exporting strategy and positively influences exporting.

Theory and hypotheses development

Exporting can provide firms with access to knowledge from different sources, and it can be perceived as an effective way to organizational learning (Lileeva & Trefler, 2010). Not surprisingly that the governments of many developing countries have begun to promote exporting hoping that it can facilitate technological efforts and eventually help home market firms develop their own technological competitiveness and move up the value chain.

Behavioral internationalization process models and export studies focus on firm's learning and knowledge accumulation. Firm's internationalization process is perceived as a journey into unknown future and firms have to learn and uncover opportunities and threats in new environment. According to trade literature (Atkeson and Burstein, 2010; Ericson and Pakes 1995; Klette and Griliches 2000) there are several factors favoring learning of exporters: 1) the interaction with foreign competitors and customers allows to reduce costs and improve quality as firms gets more information on products and processes; 2)export provides with opportunity to scale up production because of larger markets; 3) increased competition in overseas market enhances firms to innovate and be more efficient.

Indeed, foreign importers are willing to provide exporters with necessary knowledge in order to ensure the quality and performance of imported products. They often can give a feedback on product design or quality or cost control or consumer needs (Li, Chen and Shapiro, 2010).

Results of Bravo-Ortega et al (2014) study claim that Chile's firms investing in R&D are more likely to export but not vice versa. Although exporting does not motivate investment in R&D, both export and R&D jointly positively affect productivity.

R&D intensity is in fact stimulated by export intensity. However this effect can be reduce by following factors: first, emerging market exporters are better prepared and motivated to absorb new knowledge, second, foreign sources of knowledge are more available; third, local technology supply is not sufficient.

So called "learning-by-exporting" concept attracted substantial interest recently from both economics and management scholars (Golovko & Valentini, 2014). This phenomenon refers to firm's ability to improve its performance after entering foreign markets thanks to the knowledge absorbed in these markets (De Loecker, 2010). The most attention was divided to such performance dimensions as productivity and innovativeness.

Interestingly that firms from developed and developing countries can reveal different exporting outcomes. Thus in a multi-country setting research, Lee and Sung (2005) indicated that exporting is less likely to facilitate indigenous technological efforts in emerging countries firms than in firms form more developed economies.

Generally prior literature assumes that export markets provide a variety of knowledge spillovers and information on product characteristics as well as technologies and know-how (Golovko & Valentini, 2014). However there is variance in learning outcomes across firms, which might be explained by different factors including firm's absorptive capacity.

In the literature absorptive capacity usually acts as a mediator of firm's learning-by-exporting. Just few scholars indeed raised a question how firm's exporting activity contribute to the development of firm's absorptive capacity itself.

Hypotheses development

Absorptive capacity (AC) has become on of the most important constructs in the last decades as external knowledge resources are crucial for firms nowadays. AC is defined by researchers as dynamic capability that allows firms to create value and to gain and sustain a competitive advantage by mean of external knowledge (Camison & Fores, 2010).

In the knowledge transfer studies it has been suggested that the absorptive capacity of the particular unit is the most important parameter, that defines the knowledge transfer architecture in MNCs (Gupta & Govindarajan, 2000). Due to the unequal level of absorptive capacity within the MNC and between its units, there are different levels of internal knowledge transfer. Moreover, the significant number of researches has been devoted to the question of organizations' ability to enhance the creation and development of absorptive capacity. It remains evident, that the processes of knowledge transfer and absorptive capacity are considered to be endogenous to organizational processes and arrangements (Foss and Pedersen, 2002).

The capacity to obtain knowledge on a national level is an option of not the firms within an economy only, but it is crucial to understand that when learning and exchange take place at the cross-firm level within the industry, for instance, there is also a broader non-firm-specific knowledge base, which can also be described as non-industry outer knowledge spillovers that are essential to understanding of the process of technological accumulation at a country-level. Innovation leads to complex processers of interactions between firms and their environment. The environment can be described as different interactions between firms and firstly between a firm and its network of suppliers, consumers and partners. There we should also understand that environment secondly consists of broader factors that affect the behaviour of firms: the social, political and cultural context; the institutional and organizational framework;

infrastructures; the factors, which affect the creation and distribution of scientific knowledge within the sector and nation in general.

A well-developed network is supposed to create essential access to new knowledge, but if the party is not able to absorb the new knowledge, due to low level of absorptive capacity, the transfer could not be successful. Hence, absorptive capacity is a primarily important factor in facilitating a successful knowledge transfer.

The knowledge acquisition is determined by gathering information from different sources, primarily external. The question on this phase is, where knowledge comes from. Examples of knowledge acquisition activities: sharing of production know-how, exchange of technology design, exchange with tacit knowledge, and sharing of market and customer data (Lei & Slocum, 1992). Knowledge acquisition usually takes place when the firm expands or changes its knowledge base (Lyles & Salk, 1996). The knowledge acquisition phase could be named useful because of acquisition of more codified and explicit knowledge. This process, however, is not always effective. For instance, when the knowledge is complex, hence, it is hard for allies to obtain knowledge and integrate it into their knowledge base. Also, allies often might not know what kind of knowledge could be useful in the future when alliance will be engaged into experimentation, trial and error-correcting processes. Thereby, knowledge acquisition is an important phase, which is equally important with process of alliance partners involvement in common researches, trials, and related activities of new knowledge development. The acquisition process is similar to the learning processes, which occur, when firms benchmark and implement practices.

Compared with FDI and other routes of internationalization exporting involves less commitment and risk, and requires less management skills (Cassiman & Golovko, 2011). The learning effect of exporting is one of the reason why many developing countries governments encourage exporting with policies such as setting up export-processing zones, export tax incentives, export cartels and export quality inspection (Amsden, 1989; Wade, 1990). But, actually this effect is more possible if the firm "…possess the necessary technological capabilities, absorptive capacity and resource at home to utilize spillover benefits from abroad fully, or to meet demand for more advanced products abroad" (Smith, 2014: 254).

Absorptive capacity is related to certain abilities of recognition of the significance of new knowledge that is developed externally, assimilation and application of it on commercial purposes (Cohen & Levinthal, 1989). Ding et al. (2009) and Lyles and Salk (1996) claim that the collectively set ability to absorb knowledge bears an important role in knowledge transferring. Lane et al. (2001) emphasize cognitive similarities of firms and clarify the value of relative absorptive capacity within knowledge transfer enhancement. The perspective of "dynamic capabilities" has also been discovered, which distinguishes potential and realized absorptive capacities (Ding et al., 2009). This ability is primarily dependent on a company's core related knowledge base (for instance: existing managerial expertise, experience) and organizational factors like communications and knowledge distribution. In this case, a prior knowledge base together with relative absorptive capacity could reveal the topics of innovation, business performance and inter-organizational learning (Ding et al., 2009).

Nonaka and Toyama (2002) claims that knowledge created within a context and a collection of routines facilitates the creation of additional knowledge. Relationships between buyer and suppliers are contextualized and have consistent patterns of communication, which can make them particularly effective at structuring the transfer of knowledge.

This is confirmed by Murovec and Produn (2009) who concluded that innovations are requested by buyers in the foreign market as in the process of entering foreign markets firms may be involved in discussion of product\process adaptations and innovations.

Our basic hypothesis suggests:

H1: generally exporting activity has positive impact on the development of firm's absorptive capacity

Considering controversial finding of previous studies concerning exporting and learning outcomes we suggest that the effect of exporting on absorptive capacity might be indirect, moderated by different factors.

Arrow defines learning as "the product of experience" which takes place only when there is needs to solve a problem – "takes place during activity" (1962, p. 155). This means that only those firms, which face certain challenges while exporting, are able to learn from this experience. This is usually the case of newcomers in export activity whether they are from developing countries or developed.

We assume that Russian firms possessing rather rich experience of operating in CIS countries less likely tend to absorb new knowledge in these markets. In contrary developed countries introduce unknown environment sometimes even challenging and stimulate Russian firms learn and innovate. Therefore we hypothesize:

H2: Export to other countries than CIS contributes more in Russian firm's absorptive capacity development.

In fact firms can learn from different external sources about international markets. Gunawan and Rose (2014) studying Indonesian exporting firms concluded that Indonesian manufacturing exporters rely more heavily on second-hand experience for the development of their understanding about international markets and view their foreign market experience as more valuable than their own.

However learning-by-doing was recognized by scholars as one of the most efficient way to gain new knowledge. Therefore the effect of second-hand experience may vary among firms depending on their strategy. We assume that firms possess different strategies whereas entering foreign markets: some of firms are more market and customer oriented, some are more network-building oriented. Firms can adapt their product to new market and can not. Depending on what way of absorbing knowledge they choose firms get different learning outcomes.

Golovko and Valentini (2014) suggest that entering foreign market firms will absorb and use the knowledge that better fits the specific needs of their innovation strategy. The authors define to strategies: product innovation and process innovation.

According to Gunawan and Rose (2014) firms tend to have more opportunities for regular product- and process-focused discussion with their customers compared to non-buyer suppliers, what means that buyers may be especially able to feed the firm's development of absorptive capacity because of the exchange of particularly relevant knowledge.

We assume that firm's orientation can define what exporting strategy company chooses and vice versa.

H3a: Firm's innovation strategy influence firms' exporting strategy in the following way: product innovation orientation encourage customer and market oriented export strategies; process innovation oriented strategies encourage network-building export strategies

H3b: Firm's exporting strategy affects firms innovation strategy in the following way: customer and market oriented export strategies encourage product innovation strategy; network-building export strategies encourage process innovation oriented strategy.

H3c: the relationships between innovation and export strategies are mediated by firm's absorptive capacity.

Data and measurements

Data collection

The survey was disseminated among Russian firms involved in exporting activity. In initial sample we had 1478 firms. At first round CEO or export managers were asked to fill out the questionnaire online by email. The respond rate was about 6%. At second round managers we asked to fill the printed questionnaire during industrial exhibitions and other events. Data

collecting is still in process, but sample of 107 observations allows us to conduct pilot analyze and test our hypotheses.

The only requirement for the firm was their belonging to manufacturing industries. Firm size, industry, profitability will be control variables in the model.

The questionnaire represents 18 questions required the answers either by Likert scale or concrete figures. Thus we rely as on objective as on subjective measurement.

Table 1. Variables measurement

Variable	**Measurement**	**Question in the questionnaire**
Absorptive capacity	- number of patents; - number of personnel working in R&D department;	-How many new patent did you firm register for last 4 years? - How many employees are involved in research and development in yout firm?
Exporting activity	- export intensity – the percentage of export in total sales;	
Independent variables		
Non-CIS export	- percentage of export to non CIS countries;	What percentage of your export goes to non CIS countries?
Innovation strategy	Product innovation strategy Process innovation strategy	-Does you firm innovate new products or improve existing products? (likert scale) -Does your firm use new ways of production or improve already existing?
Export strategy	Customer oriented	Evaluate the degree of your firm's involvement in solving following tasks: -get information about foreign market; -get funding; -get information about potential customers -get financial information about customers
	Product oriented	-product adaptation - product promotion
	Network oriented	-get to know how to export -manager's motivation to develop exporting -network building
Control variables		
	Export experience	-how many years does your firm export?
	Export personnel	-how many people do work for export?
	Firm's profitability	-evaluate your firm's profitability

		(Likert scale)
	Export planning	-Does your firm follow specific export plan? (likert scale)

Dependent variable

As we aim to analyze the relationship between export and absorptive capacity we have to dependent variables: exporting and absorptive capacity.

Such objective measures of AC as R&D expenditure, number of patents, number of employees with higher education qualifications are increasingly criticized by academic as they turn out to be insufficient to capture the richness of such a complex construct (Camison and Fores, 2010). However R&D expenditure is frequently used as proxy for absorptive capacity and it was included in our questionnaire. Exploratory factor analysis (EFA) showed that two constructs sufficiently constitute AC: number of patents and number of personnel working in R&D department. Therefore the AC was measured by these two indicators.

Exporting activity in fact represents export intensity that is percentage of export in total sales.

Independent variables

Firm's innovating strategy: according to Golovko and Valentini (2014) we can identify two major innovating strategies: focus on product innovation or on process innovation. This is the measurement of the construct innovation strategy.

Export strategy is constituted by several parameters. The respondents were asked to evaluate their firm's involvement in solving different tasks while entering foreign market. These tasks are getting information about the market, getting funding, product adaptation etc. (the whole list see in attachment). Factor loading for all of these variables was more than 0,75.

Controls

We used several control variables such as firm's profitability, number of years of exporting, number of personnel working for exporting in the firm and export planning.

Analysis

Structural equations modeling (SEM) were used to perform the primary analyses of the available at the moment dataset. SEM allows for the inclusion of latent variables that can only be measured through observable indicators. Furthermore, SEM assesses measurement error sand allows all the relationships proposed in the conceptual models to be estimated simultaneously. SPSS 22 software was used to estimate the models for our research hypotheses.

The psychometric properties of the measurement scales included content validity, reliability, discriminant validity, convergent validity, and scale dimensionality.

Research findings

In order to reveal the relationship between exporting and absorptive capacity we analyzed separately two models. The analysis did not support the hypothesis that exporting enhances firm's absorptive capacity directly. Nevertheless the analysis shows that export positively affects product innovation, which in turn enhance firm's absorptive capacity.

Another way round we observed that firm's absorptive capacity significantly affects exporting activity in a positive way. Moreover we found that absorptive capacity shapes firms

exporting strategy. The AC positively correlated with networking building, personnel motivation to develop export activity and product promotion in the foreign market.

Table 2. CFA results summary

	Cronbach's α	$\chi 2$	df	CFI	RMSEA	SRMR
Absorptive capacity						
Number of patents	0.787	2.711*	5	0.887	0.772	0.067
Number of R&D personnel	0.936	9.187**	4	0.975	0.091	0.031
Export intensity	0.875	78.840*	9	0.948	0.857	0.041
Innovation strategy						
Product innovation	0.859	65.167**	5	0.938	0.089	0.047
Process innovation	0.935	67.311**	7	0.876	0.087	0.053
Export strategy						
Customer oriented	0.898	676.710***	119	0.876	0.098	0.053
Product oriented	0.803	54.300***	14	0.952	0.077	0.040
Network oriented	0.926	325.865**	77	0.928	0.089	0.043
Years of exporting	0.883	27.356***	12	0.915	0.092	0.068
Export personnel	0.758	35.198*	21	0.762	0.798	0.039
Firm's profitability	0.675	2.711	5	1.000	0.045	0.011

*p< .05, **p<.001, ***p<.0001

In our final model we tested relationships between export and innovation strategies mediating by absorptive capacity. We found that absorptive capacity does not influence directly on firm's innovation strategy however it indirectly it does. Enhancing firm's capability to absorb knowledge about getting funding and about customers it negatively affects firm's orientation to product innovation although it positively affects firm's orientation to product and process innovation through developing product adaptation.

As we hypothesized firm's exporting to non-CIS countries indeed affects firm's absorptive capacity in a positive sense. Besides we found positive significant relationship between absorptive capacity and export planning as well as export experience. Thus we confirm prior suggestions that firms better develop their absorptive capacity if they already have substantial basis for it.

Conclusion

Our study of relationship between exporting activity and absorptive capacity of Russian firms revealed that there is not direct effect of exporting activity on firm's absorptive capacity. This result supports theory of "self-selection" predicting that those firms, which already have enough developed technological and organizational capabilities, enter foreign markets more successfully.

Absorptive capacity concept emphasizes the importance of firm's prior knowledge and experience. Firms already possessing certain technological and innovating capabilities tend to gain more from external knowledge rather than non-experienced firms (Cohen and Levinthal, 1991). Development of AC depends on: firm's prior internalized experience (Zahra and George, 2002); the diversity and complementarity of external sources of knowledge (Lane and Lubatkin, 1998); and the firm's prior related knowledge (Perez-Nordtvedt et al, 2008).

Nevertheless there is indirect effect of export on the development of absorptive capacity. Exporting firms are more oriented towards product innovation what in its turn enhance firm's absorptive capacity. Moreover the exporting strategy of the firm also defines the

innovation strategy. Thus product adaptation in foreign market affects both product and process innovation positively. In contrary focus on gathering information about market and customers and their financial state does not encourage product innovation strategy. Focus on building network turns the firm towards process innovation strategies.

By this study we contribute to export literature as well as to absorptive capacity and innovation's research. On the sample of Russian firms we confirmed that absorptive capacity should be developed enough before firm starts exporting activity. Export itself does not contribute to absorptive capacity development however indirectly it supports product innovation strategy of the firm enhancing the absorptive capacity.

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